

The result of these three features is that a very low helix angle can be used so that the component of the tooth load A, which provides the tipping couple, is kept to a minimum, and the diameter of the planet wheel is kept low, so that the moment arm between the forces A—A on the drawing is small. Hence the size of the couple is minimized for the planet wheel within the limits set by the various stresses on the wheel.

In a typical example of a gear box according to the present invention the following dimensions were used :

Horse power transmitted	10,000
Number of planets	9
Dia. of planets	1.76 in.
Length of teeth	2.28 in.
Height of teeth	0.202 in.
Overlap ratio	1
Number of teeth on planet 22	
Tooth load	2340 lb. (torque)
Helix angle	8.127°
End load due to helix	328 lb. (per planet)
Tipping couple	587 lb. in.
Offset of sun and annulus	0.472 in.
Pressure Angle	28°
Radial component of tooth load	1245 lb.
Restoring couple	587 lb. in.

I claim:

1. A simple epicyclic gear train consisting of a single sun wheel, a plurality of planet wheels and a single sur-

rounding annulus gear, all of which have teeth of a single helix angle, wherein the sun wheel and annulus gear are relatively axially displaced along the planet wheels so as to mesh with different axial portions of the teeth on said planet wheels, wherein the radial components of the tooth loads on the planet wheels, due to the pressure angles of the teeth, produce a couple which opposes the tipping moment on the planet wheels due to the sun wheel and annulus gear meshing with teeth of a single helix angle.

2. A simple epicyclic gear train consisting of a single sun wheel, a plurality of planet wheels and a single surrounding annulus gear, all of which have teeth of a single helix angle, wherein the sun wheel and annulus gear are relatively axially displaced along the planet wheels so as to mesh with different axial portions of the teeth of the planet wheels adjacent the ends thereof but with a common portion at the mid-length thereof, wherein the radial components of the tooth loads on the planet wheels, due to the pressure angles of the teeth, produce a couple which opposes and substantially balances the tipping moments on the planet wheels due to the sun wheel and annulus gear meshing with teeth of a single helix angle.

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